

## **Section 404 (b) (1) Alternatives Evaluation**

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Hamilton Wetland Restoration Project  
Bel Marin Keys Unit V Restoration Expansion  
**Section 404(b)(1) Evaluation**

Clean Water Act Section 404(b)(1) authorized the development of guidelines for specification of disposal sites for dredged or fill material by the U.S. Environmental Protection Agency (USEPA) in conjunction with the U.S. Army Corps of Engineers (Corps). The USEPA subsequently developed and adopted the Section 404(b)(1) guidelines in conjunction with the Corps (40 CFR Part 230). The purpose of these guidelines is to “restore and maintain the chemical, physical, and biological integrity of the waters of the United States through the control discharges of dredged or fill material”. This document reviews the compliance of the proposed restoration alternatives for the Bel Marin Keys Unit V (BMKV) Expansion of the Hamilton Wetland Restoration Project (HWRP) with these guidelines. This document incorporates by reference the information presented in the Draft Supplemental Environmental Impact Report/Statement (SEIR/S) prepared for the BMKV Expansion of the HWRP.

## Expansion Description

### Location

The BMKV expansion site is located within the San Francisco Bay Estuary in unincorporated Marin County and Novato, California. See Figure 1-1 in Chapter 1 of the SEIR/EIS.

### Overview Description

The Coastal Conservancy is proposing to restore wetlands at the BMKV site as an addition to the HWRP already authorized for implementation at the adjacent Hamilton Army Airfield (HAAF) and State Lands Commission (SLC) parcels. The BMKV site, prior to 1850 supported bay subtidal habitat, tidal marsh, and tidal ponds. The BMKV expansion site presently consists of subsided diked baylands utilized for agriculture that also supports limited areas of subtidal mudflat, tidal marsh, and freshwater wetland and pond habitat. The proposed wetland restoration would return the site primarily to tidal wetland conditions,

establish new seasonal wetland and/or open water habitat, and reestablish important ecological functions in the San Francisco Bay Estuary.

A range of restoration alternatives was considered by the Corps, California State Coastal Conservancy (Conservancy), and San Francisco Bay Conservation and Development Commission (BCDC) prior to selection of the alternatives to be evaluated in the SEIR/EIS. Three alternatives were selected as representing a reasonable range of restoration alternatives for purposes of the National Environmental Policy Act/California Environmental Quality Act (NEPA/CEQA) document. These 3 alternative include 2 alternatives that involve the placement of dredged material to accelerate the formation of wetland elevations and 1 alternative that relies primarily on natural sedimentation. All of the alternatives include breaches to San Pablo Bay; 2 of the alternatives also include breaches to Novato Creek. Each of the alternatives has a different Bay Trail alignment. All of the alternatives include establishment of a hydrological connection to Pacheco Pond, though through different means. The alternatives are listed below.

- Alternative 1 – Dredged Material Placement with Enlarged Pacheco Pond
- Alternative 2 – Dredged Material Placement with Seasonal Wetlands
- Alternative 3 – Natural Sedimentation with Enlarged Pacheco Pond

Detailed descriptions of each alternative are provided in Chapter 3 of the BMKV SEIR/EIS.

Site construction activities that would be subject to regulation under Section 404 of the Clean Water Act include:

- construction of perimeter containment levees, pilot levees, phase levees, berms and internal peninsulas where these levees are located in jurisdictional waters (all Alternatives)
- placing dredged material on the BMKV site in jurisdictional waters (Alternatives 1 and 2 only);
- placing salvaged topsoil on the BMKV site in jurisdictional waters; and
- construction of portions of the Bay Trail, depending on alternative

## **Statutory Authority and Purpose**

Refer to Section 2 of the BMKV SEIR/EIS for a discussion of the proposed expansion's statutory authority, purpose, and need.

## **Dredged and Fill Material**

The proposed action would be constructed using fill material excavated from the expansion site and dredged material imported from offsite. Dredged material may

originate from many sources, including the Port of Oakland 50-foot Deepening Project, Corps of Engineers operations and maintenance dredging program, and other non-federal dredging projects. It is possible that suitable dredged material from other dredging projects might also be used, provided the Dredged Material Management Office (DMMO) determines that the proposed material is appropriate for use as wetland cover material.

Each alternative includes the potential for salvaging of existing topsoil. The upper 1 foot of existing site soils and sediments would be excavated from designated areas, salvaged and stockpiled during the beginning stages of construction. The salvaged material would be reapplied onsite to construct and improve levees, and to facilitate the creation of season wetland and upland transition habitats in the final phase of construction.

Alternatives 1 and 2 would utilize dredged material to establish initial surface elevations of the wetlands and to create levees. Alternative 1 is estimated to require 13,200,000 cubic yards of dredged material, while Alternative 2 is estimated to require 12,000,000 cubic yards. Alternative 3 would only include placement of additional dredged material on a 90-acre portion of the State Lands Commission (SLC) parcel, but would not use dredged material at the BMKV site, and would represent a decrease in the use of dredged material overall at the authorized HWRP of 2,600,000 cubic yards. The placement of dredged material on the SLC parcel is already part of the authorized HWRP and was analyzed in a prior 404(b)(1) evaluation included in the Corps feasibility study for the HWRP in 1998.

A detailed description of construction activities required under each alternative is provided in Chapter 3 of the BMKV SEIR/EIS.

## **Discharge Sites**

All 3 alternatives would require the creation of tidally influenced sub-basins to facilitate tidal wetland restoration. For Alternatives 1 and 2 dredged material would be used to fill the sub-basins to raise the surface elevation of the site. Alternative 3 would require the establishment of marsh plain elevations through the natural deposition of sediments from San Pablo Bay.

Habitat types on the BMKV site include coastal salt marsh tidal and nontidal, brackish open water, season wetland, grassland/seasonal wetland, and agriculture. The locations of these habitats are shown on Figure 4-7 of the BMKV SEIR/EIS. During the placement of dredged material, creation of temporary and permanent levees, and breaching of outboard levee, nontidal salt marsh, brackish open water and marsh, seasonal wetlands, and agricultural lands will be reduced or eliminated due to fill. Estimated acres of habitat types present in the BMKV site, under each alternative at maturity, and net change of habitat types from no expansion conditions to each alternative are shown on Table 4-7 of the BMKV SEIR/EIS.

## Discharge Method

Dredged material is only used on the BMKV site in Alternative 1 and 2. As part of Alternative 3, there would be a change to the original HWRP and dredged material would only be placed on approximately 90 acres of the SLC parcel. Dredged material would be placed on the BMKV site through use of the hydraulic off-loader and piping being built for the HWRP. The hydraulic off-loader would be located in San Pablo Bay, approximately 30,000 feet offshore. Dredged material would be transported by barge to the off-loader, mixed with bay water to form a slurry, and pumped to BMKV site. The wetland restoration expansion would begin to accept dredged material during Phase 2 of construction.

If used, salvaged topsoil would be excavated from BMKV site and moved to staging area and later used to create levees and upland and seasonal wetlands using common construction equipment such as scrapers, bulldozers, graders, and compactors.

## Factual Determinations

The 404(b)(1) guidelines (40 CFR Part 230, Subpart B, Section 230.11) require the determination in writing of the potential short-term and long-term effects of a proposed discharge of dredged or fill material on the physical, chemical, and biological components of the aquatic environment. These factual determinations are presented below.

## Physical Substrate Determinations

The surface elevation of most of the BMKV site has subsided below sea level. The bottom elevation of BMKV site would be raised by the placement of dredged material and/or the process of natural sedimentation from San Pablo Bay.

In all 3 alternatives, the construction of the levees, the placement of the dredged material, the breaching of outboard levees, and lowering of levees would result in loss of existing on-site jurisdictional water and wetlands as noted below:

In Alternative 1, approximate acreages of areas lost include:

- 21 acres of non-tidal coastal salt marsh due to fill;
- 52 acres of brackish open water and marsh due to fill;
- 114 acres of seasonal wetlands due to fill;
- 151 acres of agricultural wetlands due to fill;
- 7 acres of tidal mudflat and/or marsh due to breaches;

- 10 to 20 acres of tidal mudflat and/or marsh due to change in Novato Creek morphology due to increase in tidal prism and resultant erosion; and
- Up to 2 acres due to fill from Bay Trail construction.

In Alternative 2, approximate acreages of areas lost include:

- 21 acres of non-tidal coastal salt marsh due to fill;
- 52 acres of brackish open water and marsh due to fill;
- 114 acres of seasonal wetlands due to fill;
- 151 acres of agricultural wetlands due to fill;
- 6 acres of tidal mudflat and/or marsh due to breaches;
- 10 to 20 acres of tidal mudflat and/or marsh due to change in Novato Creek morphology due to increase in tidal prism and resultant erosion.

In Alternative 3, approximate acreages of areas lost include:

- 21 acres of non-tidal coastal salt marsh due to inundation and/or fill;
- 52 acres of brackish open water and marsh due to inundation and/or fill;
- 114 acres of seasonal wetlands due to inundation and/or fill;
- 151 acres of agricultural wetlands due to inundation and/or fill; and
- 4 acres of tidal mudflat and/or marsh due to breaches.

In Alternative 1, this loss would be offset by restoration of approximately (see Table 4-7 of the SEIR/EIS):

- 1039 acres of tidal marsh;
- 147 acres of tidal and subtidal channels;
- 50 acres of brackish open water and marsh; and
- 40 acres of seasonal wetlands.

In Alternative 2, this loss would be offset by restoration of approximately (see Table 4-7 of the SEIR/EIS):

- 1039 acres of tidal marsh;
- 137 acres of tidal and subtidal channels; and
- 210 acres of seasonal wetlands.

In Alternative 3, this loss would be offset by restoration of approximately (see Table 4-7 of the SEIR/EIS):

- 1274 acres of tidal marsh;
- 197 acres of tidal and subtidal channels; and

- 50 acres of brackish open water and marsh.

## **Water Circulation, Fluctuation, and Salinity Determinations**

Tidal fluctuations into and out of the restored tidal wetlands under all 3 alternatives would generate large tidal currents in and around the perimeter levee breaches. The fluid momentum associated with these flows would be rapidly dissipated along the mud flats as the channels discharge into Novato Creek and San Pablo Bay. Because of the vast size and volume of San Pablo Bay and the proximity of the Novato Creek breach to the mouth of the creek, the general effect of this momentum exchange would be insignificant away from the point of discharge. Thus, large-scale circulation patterns in Novato Creek and San Pablo Bay would not be significantly affected by the restoration alternatives.

## **Suspended Particulate/Turbidity Determinations**

Turbidity of waters in the wetland restoration site, Novato Creek, and San Pablo Bay are not expected to change substantially under the proposed expansion. Changes in turbidity associated with constructing levees and internal peninsulas would be isolated to waters in existing drainage channels on the BMKV site.

Construction of the restoration site using the dredged disposal approach would include hydraulic placement of fill material. Dredged material would be pumped with water as a slurry from barges in the Bay to the restoration site. Once in the restoration site, the solids in the slurry would settle, and new slurry would be added. The surplus water would need to be pumped out of the restoration area and disposed of in the Bay. This surplus water, depending on the detention time, could have substantial concentrations of fines that would degrade the receiving waters by increasing the suspended solids and turbidity.

A water quality-monitoring program will be developed and implemented to ensure adequate protection for aquatic life. Before the construction phase is initiated, water quality monitoring and reporting requirements for the proposed BMKV expansion will be established by the San Francisco Regional Water Quality Control Board (RWQCB) in project-specific waste discharge requirements (WDRs) in accordance with the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California. The WDRs will likely require sampling and analysis to provide background water quality information on the proposed expansion's discharge. The data will be used to evaluate water quality of the discharge and determine compliance with the WDRs.

Exceedance of monitoring standards may require temporary delays in material placement or the installation of turbidity curtains or other physical measures to control the flow of water and sediments.

## Contaminant Determinations

The dredged material would not contain concentrations of contaminants that would harm resources in the proposed expansion site. The sediments selected for use as cover material for tidal and seasonal wetland restoration at the proposed expansion site would need to meet DMMO determinations regarding appropriate material for wetland cover. Restriction of use of sediments to those passing the cover screening criteria would ensure that no adverse impacts on surface water quality would occur.

## Aquatic Ecosystems and Organisms Determinations

The proposed expansion would substantially increase the wetland acreage on the site. Implementation of any of the 3 alternatives would result in the restoration of over 1,000 acres of coastal salt marsh.

The SEIR/EIS provides an impact analysis of the proposed expansion on biological resources, such as special status species. No threatened or endangered plant species are expected to be affected by the proposed BMKV expansion. Threatened or endangered species that may be affected by the BMKV expansion include: Central Valley steelhead (*Oncorhynchus mykiss*), Chinook salmon (*Oncorhynchus tshawytscha*), California brown pelican (*Pelecanus occidentalis californicus*), California clapper rail (*Rallus longirostris obsoletus*), and salt marsh harvest mouse (*Reithrodontomys raviventris*).

One of the expansion goals is to create and maintain wetland habitats that sustain viable populations, particularly for Bay Area threatened and endangered species. The increase in subtidal aquatic habitat in the tidal marsh would benefit resident and anadromous fish like central valley steelhead, and chinook salmon, and other non-listed species. The proposed expansion would directly benefit salt marsh harvest mouse and California clapper rail, and California brown pelican by increasing suitable habitat. Furthermore, the expansion would greatly improve suitable nesting habitat for a waterfowl and suitable habitat for migratory shorebirds.

The SEIR/EIS found that the expansion may have short-term adverse impacts on some of the listed and non-listed species. Most of these impacts would occur during the construction activities. Some of the construction impacts could be reduced or avoided by timing to avoid disturbance to breeding or migration. While some existing habitat will be lost, the long-term effect of the project will be an increase in wetland habitat, particularly for tidal-marsh dependent species. Mitigation of impacts on Biological Resources associated with the expansion are discussed in the Biological Resources section of Chapter 4 of the SEIR/EIS.



## **Human Use Determinations**

The proposed dredged and fill would comply with applicable water quality standards. The discharge would not affect municipal or private water supplies because the BMKV does not provide these uses. Recreational and commercial fisheries would not be affected because the BMKV site does not support a fishery for these purposes. The proposed discharge would improve water-related recreation and aesthetics because the restored site will be more visually appealing (upon maturity) and would include extension of the Bay Trail increasing recreational opportunities.

## **Determination of Cumulative Effects on the Aquatic Ecosystem**

As indicated above, the expansion would result in short-term loss of wetland habitat; however, this short-term loss would be offset by the substantial increase in the acreage of important tidal habitat available for sensitive wildlife and fish species. The temporary loss of existing habitat would be offset by restored habitat. Implementation of the expansion would result in a beneficial cumulative effect by increasing habitat available for sensitive wildlife and fish species in the Bay Area region.

## **Secondary Effects on the Aquatic Ecosystem**

The implementation of Alternative 1 or 2 would require that the perimeter levee be breached and full tidal circulation restored across the site; some of the dredged material would be remobilized. Tidal flows and velocities at the perimeter levee breach locations would increase localized erosion in the existing tidal slough channels and bordering marsh. Remobilization of the dredged material by tidal currents and wind-generated waves across the open fetches of the site would increase local turbidity and sedimentation until the eroded material is redeposited. No substantial offsite transport is anticipated. The impacts of increased turbidity and sedimentation would be short term, and offsite transport would eventually be eliminated when equilibrium is established in the restored tidal marsh and tidal sloughs.

## **Findings of Compliance or Noncompliance with Restrictions on Discharge**

The 404(b)(1) guidelines (40 CFR Part 230, Subpart B, Section 230.12) require written findings as to whether the proposed disposal site for the discharge of dredged or fill material:

- complies with the 404(b)(1) guidelines;
- complies with the 404 (b) (1) guidelines with the inclusion of appropriate and practicable discharge conditions to minimize pollution or adverse effects to the affected aquatic ecosystems; or
- does not comply with the 404 (b) (1) guideline requirements.

These findings are presented below.

## **Finding 1 – Adaptation of 404(b)(1) Guidelines**

No significant adaptations of the guidelines were made relative to this evaluation.

## **Finding 2 – Other Practicable Alternatives With Less Adverse Impact on Aquatic Ecosystems**

The goal of the expansion is to create a diverse array of wetland and wildlife habitats that benefits a number of endangered species and other migratory and resident species. This goal would be met by designing and engineering a restoration expansion that emphasizes beneficially reusing dredged material (in Alternatives 1 and 2), or natural sedimentation (Alternative 3) and ensuring no net overall loss of existing wetland habitats at the BMKV parcel. The proposed discharge has been designed to maximize beneficial environmental effects and increase the amount of tidal aquatic habitat on the site compared to existing conditions. Because the discharge would not result in a net adverse impact on the site habitat, the wetland and water acreage overall would substantially increase, there are no practical alternatives that would result in a less adverse impact on the aquatic ecosystem.

## **Finding 3 – Inclusion of conditions to minimize pollution and/or adverse effects to the affected aquatic ecosystems**

As described in the SEIR/EIS, mitigation is proposed to minimize pollution and adverse effects on the existing aquatic ecosystems in Novato Creek and San Pablo Bay. On-site aquatic habitat will be lost, but will be replaced by larger areas of restored habitat. Mitigation measures relevant to reducing these effects are discussed in the water quality, biology, and hazardous waste portions of chapter 4 of the SEIR/EIS.

## **Finding 4 – State Water Quality Standards**

The expansion would not violate applicable state water quality standards. The sediments selected for use as cover material for tidal and seasonal wetland restoration at the proposed expansion site would need to meet the DMMO determination for appropriate wetland cover criteria. Construction activity, including placement of dredged material, would be subject to requirements of the San Francisco RWQCB waste discharge requirements (WDRs) adopted for the expansion.

## **Finding 5 – Endangered and Threatened Species**

The restoration expansion could affect areas inhabited by the following federal threatened and endangered species: Central Valley steelhead, chinook salmon, California brown pelican, California clapper rail, and salt marsh harvest mouse. For the listed federal species that may be affected by the BMKV expansion, the Corps will expand their existing consultation process for the HWRP to include the effects of proposed activities on the BMKV site. The restoration expansion would be expected to result in short-term impacts to these species, where present, but long-term benefits due to the increase in restored habitat. The expansion is not expected to result in jeopardy of any listed threatened or endangered species and is expected to contribute to the recovery of the California clapper rail and the salt marsh harvest mouse.

## **Finding 6 – Significant Degradation of U.S. Waters**

The wetland restoration expansion would not result in significant degradation of U.S. waters. The expansion would not have a significant adverse impacts on human health and welfare, including municipal water supplies, plankton, fish, shellfish, wildlife, and special aquatic sites; on recreational, aesthetic, or economic values; or on aquatic ecosystem diversity, productivity, or stability.

## **Finding 7 – Compliance Conclusion**

On the basis of the guidelines, the proposed site for the discharge of dredged and fill material for the BMKV expansion complies with the guidelines with the inclusion of the mitigation presented in the SEIR/EIS

The purpose of the wetland restoration expansion is to:

- create over 1000 acres of wetland habitat;
- implement numerous federal, state, regional, and local plans; and
- establish a partnership between state and federal agencies to accommodate habitat restoration objectives.

The wetland restoration expansion and proposed discharge have been designed to maximize beneficial effects on the aquatic ecosystem. The proposed discharge would not result in a long-term adverse impact on the aquatic ecosystem.